

these types of transformers. It provides that partial deenergization, i.e., deenergizing only the faulted phase(s) in a low voltage radial transformer, may, in some circumstances, be equivalent to total deenergization of such transformers in the event of a high current fault. This rule states that partial deenergization will be equivalent to total deenergization only if the transformer configuration and associated safety factors demonstrate that partial deenergization is consistent with EPA's goals of avoiding fault related failures, tank rupture, and fires in PCB Transformers. Owners and operators of low voltage radial transformers in or near commercial buildings who wish to utilize partial deenergization will be required to install this type of electrical protection using good engineering practices. This rule does not alter any other current enhanced electrical protection requirements.

DATES: This amendment shall be in effect February 25, 1991. In accordance with 40 CFR 23.5 (50 FR 7271), this rule shall be promulgated for purposes of judicial review at 1 p.m. Eastern Daylight on December 10, 1990.

FOR FURTHER INFORMATION CONTACT: Michael M. Stahl, Director, Environmental Assistance Division (TS-799), Office of Toxic Substances, Rm. EB-44, Environmental Protection Agency, 401 M St., SW., Washington, DC 20460, (202)-554-1404, TDD: (202)-554-0557.

SUPPLEMENTARY INFORMATION:

I. Background

EPA issued a final rule in the *Federal Register* of July 17, 1985 (50 FR 29170), which amended the August 25, 1982 PCB Electrical Use Rule (47 FR 37342). The July 17, 1985 rule (hereafter the PCB Transformer Fires Rule) placed additional conditions and restrictions on the use of PCB Transformers, particularly PCB Transformers located in or near commercial buildings.

The preamble to the 1985 PCB Fires Rule (50 FR 29177) discusses in general terms the relationship between electrical failures in transformers and the type of transformer used. The first type of transformer includes all arrangements in which the PCB Transformer can be energized only from the primary winding. These transformers are termed radial PCB Transformers. The second type includes those arrangements in which the PCB Transformer can be energized from either the primary winding or the secondary winding. These transformers are termed network PCB Transformers.

This preamble language defines the PCB Transformer based upon the system or circuit that the Transformer is in as opposed to the type of equipment itself. Thus, the Transformer is said to be in a radial system or a network system. The preamble goes on to state that unlike radial transformers, network transformers are equipped with network protectors, which are circuit breakers located on the secondary side of network transformers. This language characterizes the transformer as either network or radial on the basis of the equipment itself rather than the system or circuit in which the equipment is located.

For purposes of compliance with PCB regulations under the Toxic Substances Control Act (40 CFR part 761), PCB Transformers are distinguished in terms of the voltage level on the secondary side of the transformer. High voltage PCB Transformers are those transformers with secondary voltages equal to or greater than 480 volts, including 480/277 volt systems. Low voltage PCB Transformers are those transformers with secondary voltages less than 480 volts, including 280/120 and 208/120 volt systems. The voltage level of PCB Transformers is one factor directly related to the safety of the transformer and the probability of tank rupture or fire.

After promulgation of the PCB Transformer Fires Rule, and in response to a petition for judicial review under section 19 of the Toxic Substances Control Act (TSCA), EPA agreed to issue a clarification notice and to propose amendments to portions of the PCB Transformer Fires Rule. A Notice of Interpretation was published in the *Federal Register* of December 31, 1986 (51 FR 47241), that clarified several provisions of EPA's regulations governing the use of electrical transformers containing PCBs. Further, on August 21, 1987 (52 FR 31738), EPA issued proposed amendments to the PCB Transformer Fires Rule which, among other changes, prohibited the use of low voltage network transformers in sidewalk vaults which were not equipped with enhanced electrical protection by October 1, 1993.

Following publication of the proposed rule amendment, EPA received comments from the Utility Solid Waste Activities Group (USWAG) and from the Unison Corporation (Unison) regarding enhanced electrical protection requirements for PCB Transformers. These comments stated that the complete deenergization of a three-phase PCB Transformer with a high current fault is unnecessary to prevent

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 761

[OPTS-62035; FRL-3766-3]

Polychlorinated Biphenyls in Electrical Transformers

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This notice amends EPA's regulations under section 6(e) of the Toxic Substances Control Act (TSCA) concerning enhanced electrical protection requirements for low voltage radial transformers containing polychlorinated biphenyls (PCBs) and extends the deadline for compliance for

PCB Transformer fault related failures, tank rupture, and/or fires. The information received by EPA indicated that such a transformer could remain safely energized if only the faulted phase of the transformer were isolated and deenergized. This partial deenergization could be achieved with the use of current-limiting fuses or other equivalent technology.

On July 19, 1988 (53 FR 27322), EPA issued the final amendment to the PCB Transformer Fires Rule. At that time, EPA did not have enough information to determine whether or not partial deenergization would be sufficient to meet EPA's goals. As a result, the final rule amendment did not modify the enhanced electrical protection requirements to state that deenergization of the faulted phase is equivalent (in terms of protection against rupture) to total deenergization of the transformer. Instead, the preamble to the final rule amendment solicited public comments in the form of supplementary information to allow EPA to resolve the issue, and stated that EPA would subsequently publish an interpretative notice. EPA has received correspondence from Unison and gathered additional information regarding electrical protection devices, such as current-limiting fuses and circuit breakers, and their function in electrical distribution systems. EPA believes that these comments and this information, as well as supporting statements in the rulemaking record, warrant amending the rule to allow deenergization of the transformer's faulted phase under certain circumstances. EPA is issuing this amendment as a final rule due to the fact that it effects a change in the requirements of § 761.30(a)(1)(iv) following the solicitation of public comments. This rule applies only to low voltage radial transformers. EPA has not received information sufficient to allow the partial deenergization of the faulted phase of low voltage network transformers.

II. Findings

Upon reviewing the rulemaking record for the PCB Transformer Fires Rule, the amendment to that rule, the Regulatory Impact Analysis of the PCB Fires Rule (dated June 19, 1985), and supplemental information listed in Unit III of this document, EPA has become convinced by its own analysis and the new information received that partial deenergization, i.e., deenergization of only the faulted phase(s), is an acceptable form of enhanced electrical protection for the class of low voltage radial three-phase transformers, for purposes of compliance with 40 CFR

761.30(a)(1)(iv), provided certain conditions are met. Specifically, if partial deenergization is selected, the current-limiting fuses or other enhanced electrical protection selected must be able to clear the fault before the magnitude and duration of the overcurrent exceed the short-time loading limits (withstand capacity) of the transformer.

To assure that the enhanced electrical protection equipment selected is capable of meeting this standard, the owner/operator of the commercial building which a PCB Transformer is "in or near" must have the protective device (e.g., circuit breaker or current-limiting fuse), installed in accordance with good engineering practices.

The owner/operator must use a current-limiting fuse or equivalent technology that is capable of clearing all overcurrent faults which may occur prior to exceeding the short-time loading limits (withstand capacity) of the transformer. In considering the type of fuse to be installed, the owner/operator must consider the following: (1) The short-time loading limit recommended by the transformer manufacturer or, if no such recommended limit is available, the recognized guidelines for the maximum permissible transformer through-fault-current duration limits as reported in the Institute of Electrical and Electronics Engineers, Inc. (IEEE) publication ANSI/IEEE C57.109-1985, IEEE Guide for Transformer Through-Fault-Current Duration, and (2) such factors which have or will affect the condition and performance of the individual transformer, such as the age, physical environment, degree of preventative maintenance performed, other electrical protection equipment present, and associated safety factors. EPA believes that these conditions must be considered to assure the proper operation of the protective device to avoid tank rupture or fire in the PCB Transformer. Documentation (i.e., electrical drawings) shall be kept capable of demonstrating that the current-limiting fuse or other equivalent technology was installed in accordance with good engineering practices. In addition, a regular maintenance schedule must be established for the transformer, if one does not already exist.

Current-limiting fuses are the usual form of protective device selected to achieve partial deenergization of a faulted phase of a low voltage radial PCB Transformer. This type of fuse is typically equipped with a silver element which is designed to melt quickly under overcurrent conditions. Upon melting,

the fuse creates an arc in the circuit which creates considerable heat. The heat is usually absorbed by sand in the fuse cartridge. This absorption, in conjunction with the melting of the fuse element, creates high resistance in the circuit which gives the fuse its current-limiting action.

After October 1, 1990, high voltage radial transformers must be equipped with enhanced electrical protection which can completely deenergize the transformer to comply with requirements for low current protection (40 CFR 761.30(a)(1)(v)). Since complete deenergization must be provided for under the low current provision, circuit breakers or equivalent electrical protection must be used. Current-limiting fuses are not capable of providing low current protection due to the nature of their design. Therefore, low voltage network transformers and high voltage radial transformers are required to be equipped with electrical protection sufficient to completely deenergize the transformer (within several hundredths of a second in the case of high voltage radial PCB Transformers and within tenths of a second in the case of low voltage network transformers) before transformer rupture occurs. Current-limiting fuses by themselves are not sufficient for this purpose.

III. Official Rulemaking Record

EPA has established a public record for this rulemaking (docket control number OPTS-62035I). A public version of this record containing nonconfidential materials is available in the TSCA Public Docket Office for reviewing and copying from 8 a.m. to noon and 1 p.m. to 4 p.m., Monday through Friday, except legal holidays. The TSCA Public Docket Office is located in Rm. NE-G004, 401 M St., SW., Washington, DC. The following documents for this final rule are in the public record:

A. Previous Rulemaking Record

1. Official rulemaking record from "Polychlorinated Biphenyls in Electrical Transformers" Final Rule, published in the *Federal Register* of July 17, 1985 (50 FR 29170). Docket number OPTS-62035D.

2. Official rulemaking record from "Notice of Interpretation of Transformer Fires Regulations", published in the *Federal Register* of December 31, 1986 (51 FR 47241). Docket number 62035E.

3. Official rulemaking record from "Polychlorinated Biphenyls in Electrical Transformers" Final Rule, published in the *Federal Register* of July 19, 1988 (53

FR 27322). Docket number OPTS-62035F-G.

B. Support Documents.

1. IEEE, ANSI/IEEE C37.108-1989, IEEE Guide for the Protection of Network Transformers, Institute of Electrical and Electronic Engineers, New York, December 18, 1989.

2. IEEE, ANSI/IEEE C57.109-1985, Guide for Transformer Through-Fault-Current Duration, Institute of Electrical and Electronic Engineers, New York, December 2, 1985.

3. IEEE, ANSI/IEEE C57.12.00-1987, General Requirements for Liquid-Immersed Distribution, Power and Regulating Transformers, Institute of Electrical and Electronic Engineers, New York, April 1, 1988.

4. Dr. Steven C. Vick, Transformer Life Expectancy, Union Carbide Corporation, New York, 1987.

5. Letters received from:

a. D.F. Tullioh, UNISON Transformer Services Inc., Union Carbide Corp., dated March 24, 1988, to L.V. Moos, EED, OPTS, USEPA.

b. Timothy S. Hardy, Kirkland & Ellis, Counsel for Unison Transformer Services, Inc., dated October 27, 1988, to D.M. Keehner, EED, OPTS, USEPA.

6. Telephone communication between H. Carl Manger of Baltimore Gas and Electric and Paul Borst, EED, OPTS, USEPA, on October 27, 1989, on the safety factors associated with enhanced electrical protection for PCB Transformers.

IV. Regulatory Requirements

A. Executive Order 12291

Under Executive Order 12291, issued February 17, 1981, EPA must judge whether a rule is a "major rule" and, therefore, subject to the requirement that a regulatory impact analysis be prepared. EPA has determined that this amendment to the PCB rule is not a "major rule" as that term is defined in section 1(b) of the Executive Order and therefore not subject to the requirement that a regulatory impact analysis be prepared.

The rule provides for a less costly compliance option for certain PCB Transformers so those PCBs in electrical transformers which would otherwise be prohibited by section 6(e) of TSCA may continue to be used. This rule avoids the severe disruption of electric service to the public and industry that would occur if the use of this equipment were immediately prohibited. It also avoids the economic impact that would result from a requirement to replace the equipment as soon as possible. This rule was submitted to OMB as required by

Executive Order 12291. There were no comments from OMB on this rule.

B. Regulatory Flexibility Act

Under section 605(b) of the Regulatory Flexibility Act, 5 U.S.C. 605(b), the Administrator may certify that a rule will not, if promulgated, have a significant impact on a substantial number of small entities and, therefore, does not require a regulatory flexibility analysis.

In general, this rule reduces the burden on small businesses that would otherwise be encountered if an immediate ban on PCB-containing transformers were to take effect. If an immediate ban on the use of PCBs in transformers were imposed, large costs would be incurred by all producers and users of electricity, including small businesses.

EPA certifies that this rule will not have a significant economic impact on a substantial number of small entities.

C. Paperwork Reduction Act

There are no recordkeeping or reporting requirements in this final rule.

List of Subjects in 40 CFR Part 761

Environmental protection, Hazardous substances, Labeling, Polychlorinated biphenyls, Reporting and recordkeeping requirements.

Dated: November 16, 1990.

William K. Reilly,
Administrator.

Therefore 40 CFR part 761 is amended as follows:

PART 761—[AMENDED]

1. The authority citation for part 761 continues to read as follows:

Authority: 15 U.S.C. 2605, 2607, 2611; subpart G also issued under 15 U.S.C. 2614 and 2615.

2. In § 761.30 by revising the introductory text of paragraph (a)(1)(iv), (a)(1)(iv)(A), and by adding paragraph (a)(1)(iv)(E) to read as follows:

§ 761.30 Authorizations.

(a) * * *

(1) * * *

(iv) As of October 1, 1990, all higher secondary voltage radial PCB Transformers, in use in or near commercial buildings, and lower secondary voltage network PCB Transformers not located in sidewalk vaults in or near commercial buildings (network transformers with secondary voltages below 480 volts) that have not been removed from service as provided in paragraph (a)(1)(iv)(B) of this section, must be equipped with electrical

protection to avoid transformer ruptures caused by high current faults. As of February 25, 1991, all lower secondary voltage radial PCB Transformers, in use in or near commercial buildings, must be equipped with electrical protection to avoid transformer ruptures caused by high current faults.

(A) Current-limiting fuses or other equivalent technology must be used to detect sustained high current faults and provide for the complete deenergization of the transformer (within several hundredths of a second in the case of higher secondary voltage radial PCB Transformers and within tenths of a second in the case of lower secondary voltage network PCB Transformers), before transformer rupture occurs. Lower secondary voltage radial PCB Transformers must be equipped with electrical protection as provided in paragraph (a)(1)(iv)(E) of this section. The installation, setting, and maintenance of current-limiting fuses or other equivalent technology to avoid PCB Transformer ruptures from sustained high current faults must be completed in accordance with good engineering practices.

(E) As of February 25, 1991, all lower secondary voltage radial PCB Transformers must be equipped with electrical protection, such as current-limiting fuses or other equivalent technology, to detect sustained high current faults and provide for the complete deenergization of the transformer or complete deenergization of the faulted phase of the transformer within several hundredths of a second. The installation, setting, and maintenance of current-limiting fuses or other equivalent technology to avoid PCB Transformer ruptures from sustained high current faults must be completed in accordance with good engineering practices.

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